

**Listing of Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

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1-20. (canceled)

21. (previously presented) An apparatus for cleaning an irradiated nuclear fuel assembly, comprising:

a housing configured to receive an irradiated nuclear fuel assembly; and  
a plurality of ultrasonic transducers that each produce omnidirectional ultrasonic energy waves and positioned on said housing.

22. (previously presented) The apparatus of claim 21, wherein said housing is configured to receive an irradiated nuclear fuel assembly comprising an array of cylindrical rods.

23. (previously presented) The apparatus of claim 21, wherein said housing comprises an elongated housing having a bottom end and further comprising a base plate attached to said bottom end of said elongated housing to support said elongated housing.

24. (previously presented) The apparatus of claim 21, wherein said housing comprises an elongated structure and wherein said plurality of ultrasonic transducers is positioned along an entire length of said elongated structure.

25. (previously presented) The apparatus of claim 21, wherein each of said ultrasonic transducers comprises an elongated rod having a first end and a second end; a first transducer at said first end; and a second transducer at said second end;

wherein said housing comprises an elongated structure that extends in a predetermined direction; and

wherein each of said elongated rods is positioned substantially parallel to said predetermined direction.

26. (previously presented) The apparatus of claim 25, wherein said plurality of ultrasonic transducers is positioned along an entire length of said elongated structure.

27-28. (withdrawn)

29. (previously presented) The apparatus of claim 21, wherein said housing is configured to receive an irradiated boiling water reactor nuclear fuel assembly.

30. (new) The apparatus of claim 21, further comprising a reflector that comprises:

a cylindrical inner reflecting surface positioned around a periphery of said elongated housing; and

a cylindrical outer reflecting surface positioned around a periphery of said cylindrical inner reflecting surface and forming a gap between said cylindrical inner reflecting surface and said cylindrical outer reflecting surface.

31. (new) An apparatus for cleaning an irradiated nuclear fuel assembly, comprising:

an elongated housing configured to receive an irradiated nuclear fuel assembly comprising a plurality of fuel rods and a spacing between each of said fuel rods; and

a plurality of ultrasonic transducers positioned on said elongated housing that each produce omnidirectional ultrasonic energy waves having a node structure that is an approximate multiple of said spacing between each of said fuel rods.

32. (new) The apparatus of claim 31, wherein said approximate multiple is one.

33. (new) The apparatus of claim 31, further comprising a reflector that comprises:

a cylindrical inner reflecting surface positioned around a periphery of said elongated housing; and

a cylindrical outer reflecting surface positioned around a periphery of said cylindrical inner reflecting surface and forming a gap between said cylindrical inner reflecting surface and said cylindrical outer reflecting surface.

34. (new) An apparatus for cleaning an irradiated nuclear fuel assembly, comprising:

an elongated housing configured to receive an irradiated nuclear fuel assembly having at least four sides;

a plurality of ultrasonic transducers that each produce omnidirectional ultrasonic energy waves positioned on said elongated housing such that at least one of said ultrasonic transducers is adjacent to each one of said four sides of said irradiated nuclear fuel assembly; and

a reflector comprising a cylindrical inner reflecting surface positioned around a periphery of said elongated housing; and a cylindrical outer reflecting surface positioned around a periphery of said cylindrical inner reflecting surface and forming a gap between said cylindrical inner reflecting surface and said cylindrical outer reflecting surface.

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Concluded 35. (new) The apparatus of claim 34, wherein said elongated housing extends in a predetermined direction and wherein each of said transducers comprises an elongated rod positioned substantially parallel to said predetermined direction.

36. (new) The apparatus of claim 35, wherein said plurality of ultrasonic transducers comprises a plurality of ultrasonic transducers positioned adjacent to each of said four sides of said irradiated nuclear fuel assembly.